

# Arizona State Retirement System Board



## US Equity Small Cap Asset Class

Gary R. Dokes, Chief Investment Officer  
Dan Kapanak, Manager of Investment Strategies  
Terry A. Dennison, Mercer Investment Consulting

February 15, 2008

# Presentation Topics

## **ASRS US Equity Small Cap Asset Class (Aggregate)**

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- Mandates Overview

- Quantitative:

  - Risk/Return Bubble Chart

  - Performance Analysis (Returns – Based)

    - Alpha

    - Information Ratio

    - Peer Review

  - Positions (Holdings – Based)

    - Style Analysis

    - Economic Sectors

- Mercer Manager(s) Ratings

## **US Equity Small Cap Manager Reviews (Individual)**

- Qualitative:

  - People, Philosophy, Process

- Quantitative:

  - Performance Analysis (Returns – Based)

    - Alpha

    - Information Ratio

    - Peer Review

  - Positions (Holdings – Based)

    - Style Analysis

    - Economic Sectors

- Mercer Manager Review

# ASRS US Equity Small Cap Asset Class (Aggregate)

# ASKS US Equity Small Cap Asset Class

December 31, 2007

Market Value: \$1.8b

Passive Percent: 47%

Target 30%  $\pm$ 20%

Active Style Composition:

Growth: 48%

Value: 52%

Portfolios:

1 Passive

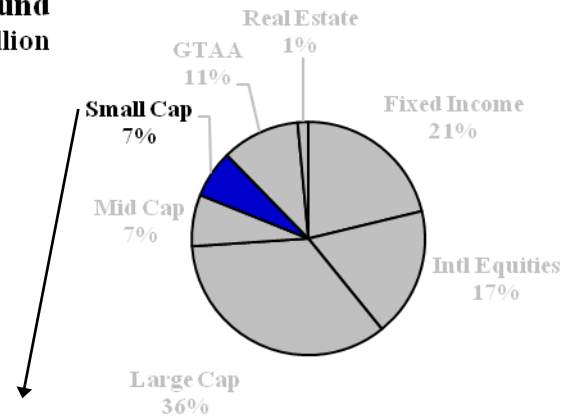
1 Transition\*

2 Active:

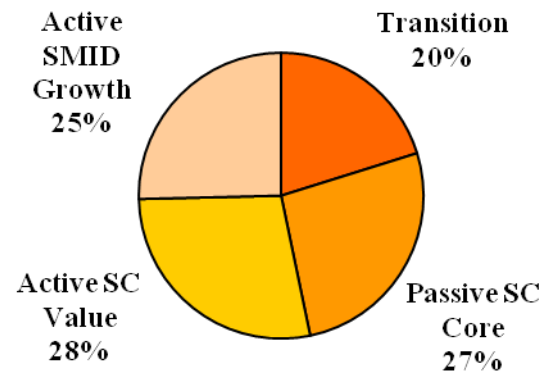
Quantitative: 1

Average Fee: 34 bps

**Total Fund**  
\$27.6 billion



**Style Composition**



\*Batterymarch was terminated in February 2007 and the mandate's assets were transferred to E6. These assets served as the primary funding source to three new managers in January 2008.

# ASKS US Equity Small Cap Asset Class

## January 2, 2008

Market Value: \$1.8b

Passive Percent: 26%

Target 30%  $\pm$ 20%

Active Style Composition:

Core: 21%

Growth: 41%

Value: 38%

Portfolios:

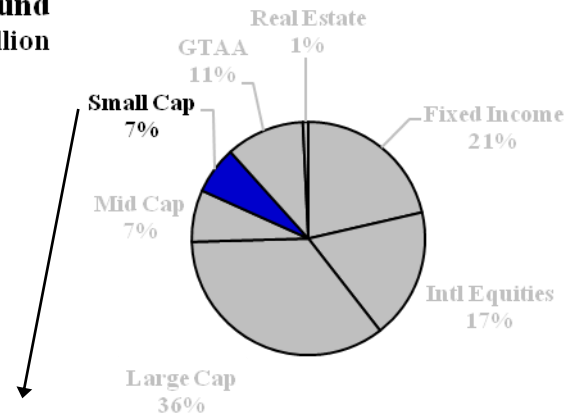
1 Passive

5 Active:

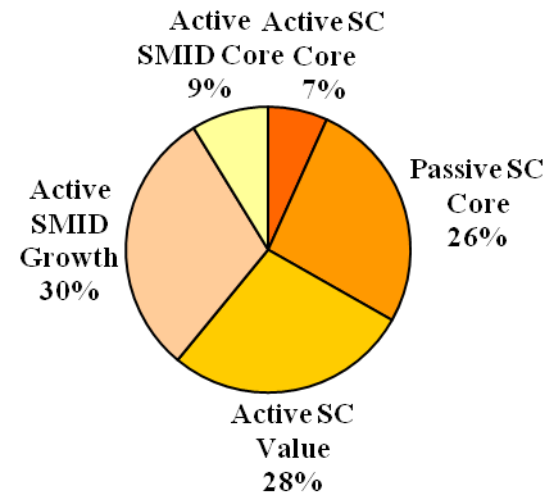
Quantitative: 1

Average Fee: 43 bps

**Total Fund**  
\$27.6 billion



**Style Composition**



# ASRS US Equity Small Cap Managers

## Mandates Overview

December 31, 2007

Manager	Style	Benchmark	Inception	Expected Alpha (bps)	Portfolio Assets (\$mil)	Strategy Assets (\$mil)
Active						
DFA	Value	S&P 600 Value	8/31/98	200	\$508	\$ 32,427
TimesSquare	SMID Growth	Russell 2500 Growth	3/31/05	215	\$462	\$3,542
Passive						
ASRS E6	Core	S&P 600	2/1/07	10	\$484	\$484

# ASRS US Equity Small Cap Managers

## Mandates Overview

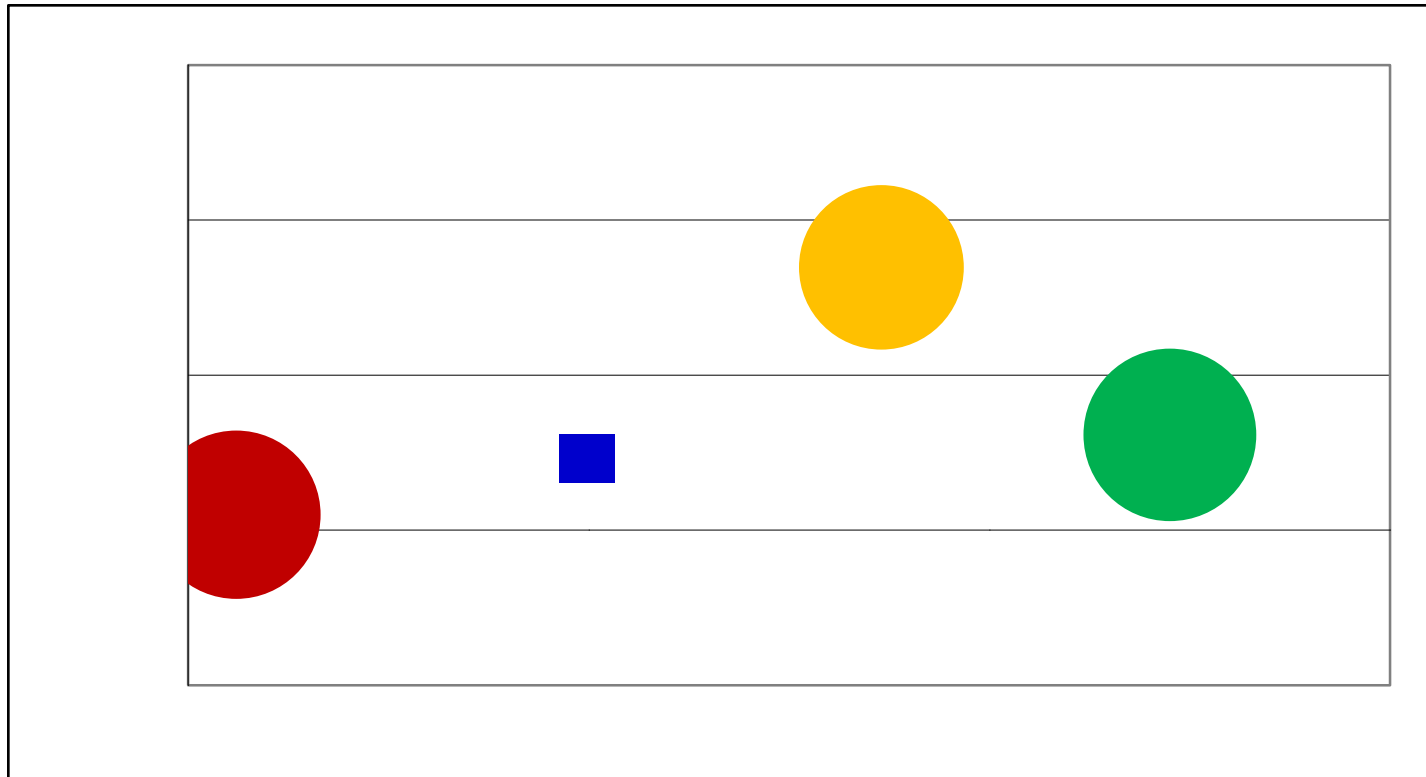
January 2, 2008





Manager	Style	Benchmark	Inception	Expected Alpha (bps)	Portfolio Assets (\$mil)
<b>Active</b>					
DFA	Value	S&P 600 Value	8/31/98	200	\$501
TimesSquare	SMID Growth	Russell 2500 Growth	3/31/05	215	\$456
CopperRock	SMID Growth	Russell 2500 Growth	12/31/07	200	\$92
IronBridge	SMID Core	Russell 2500	12/31/07	200	\$158
Champlain	Core	S&P 600	12/31/07	200	\$122
<b>Passive</b>					
ASRS E6	Core	S&P 600	2/1/07	10	\$479

# Risk/Return Bubble Chart

## ASRS US Equity Small Cap Asset Class

Inception Date June 30, 2002\* – Period Ending December 31, 2007



	Manager	Portfolio Size	Inception	Alpha	Tracking Error	Information Ratio
	DFA	\$ 508.1	8/31/1998	1.2	4.9	0.3
	TimesSquare	\$ 462.2	3/31/2005	3.4	3.5	1.0
	E6	\$ 484.2	2/1/2007	0.2	0.2	0.8
	<b>Asset Class**</b>	<b>\$ 1,842.8***</b>	<b>06/30/2002</b>	<b>0.9</b>	<b>2.0</b>	<b>0.4</b>

\* TimesSquare calculations include only 11 quarterly data points as the inception date was 3/31/2005.

E6 calculations include only 10 monthly data points as the inception date was 2/1/07.

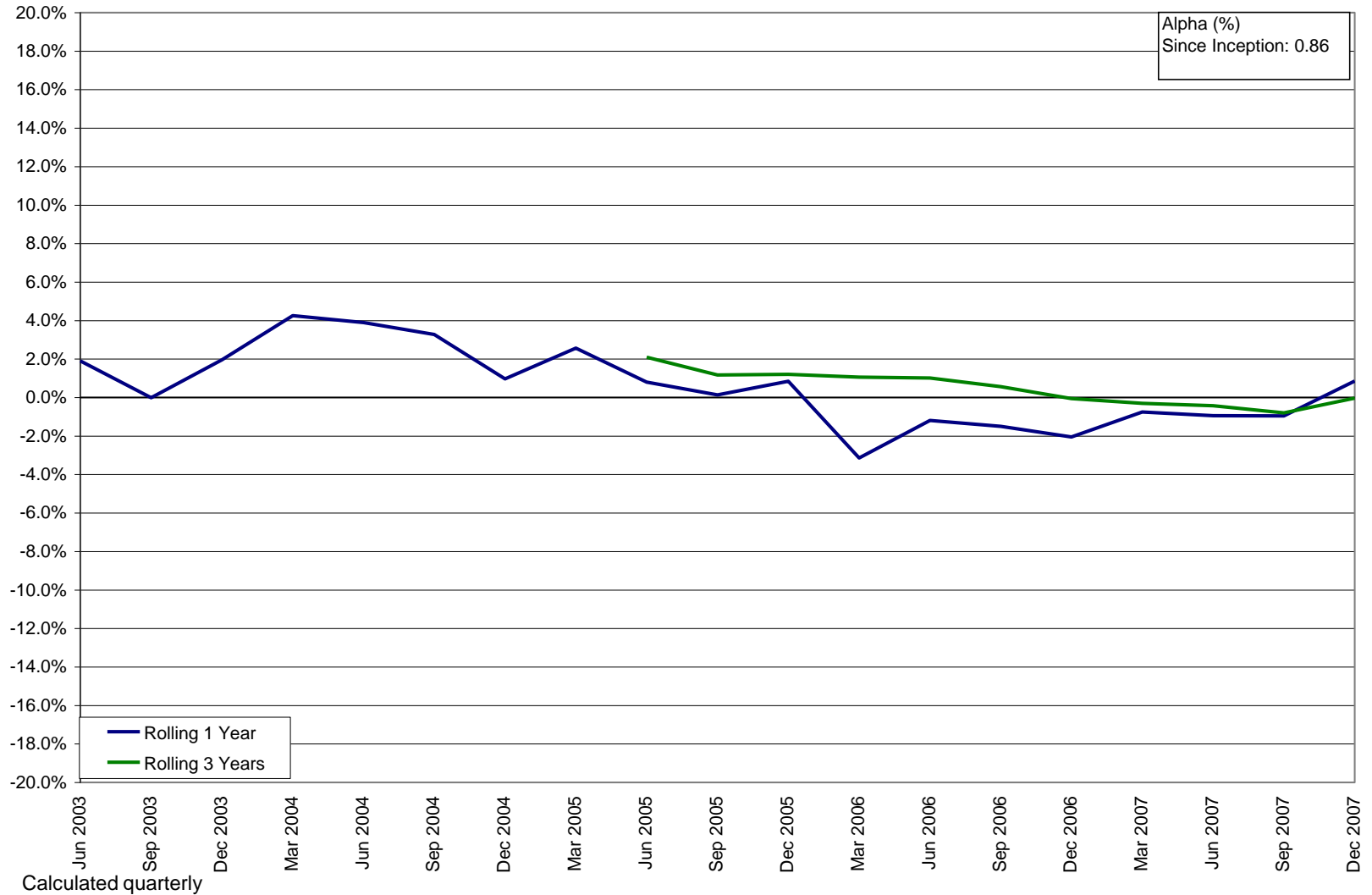
\*\* The Asset Class risk/return calculations include both existing and terminated managers.

\*\*\* The Asset Class market value includes the transition account .

# Alpha

## ASRS US Equity Small Cap Asset Class

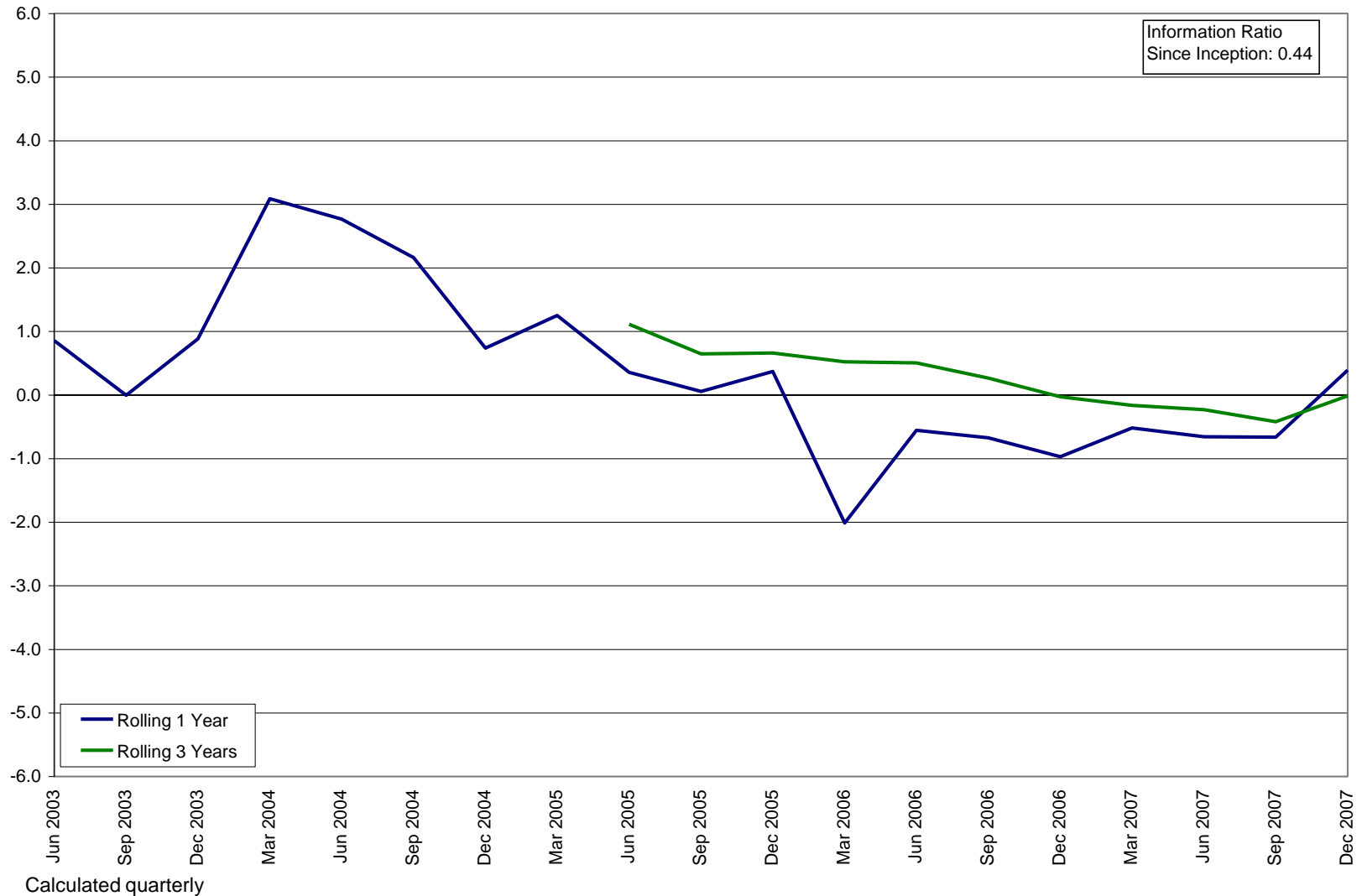
Inception Date June 30, 2002 - Period Ending December 31, 2007



# Information Ratio

## ASRS US Equity Small Cap Asset Class

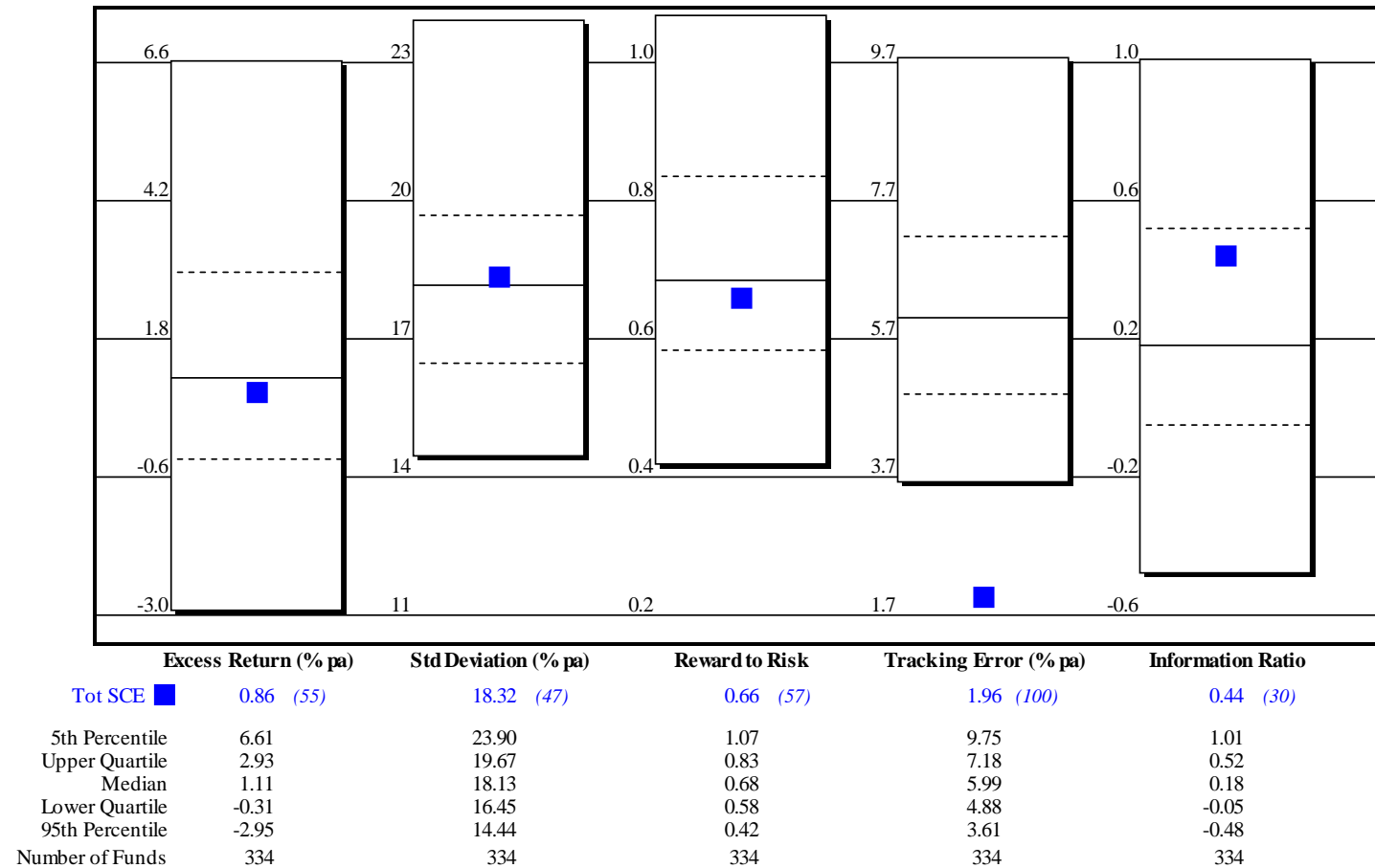
Inception Date June 30, 2002 - Period Ending December 31, 2007



# Peer Comparison with the Mercer US Equity Small Cap Equity Universe

## Total Fund Small Cap Equity

Inception Date June 30, 2002 – Period Ending December 31, 2007



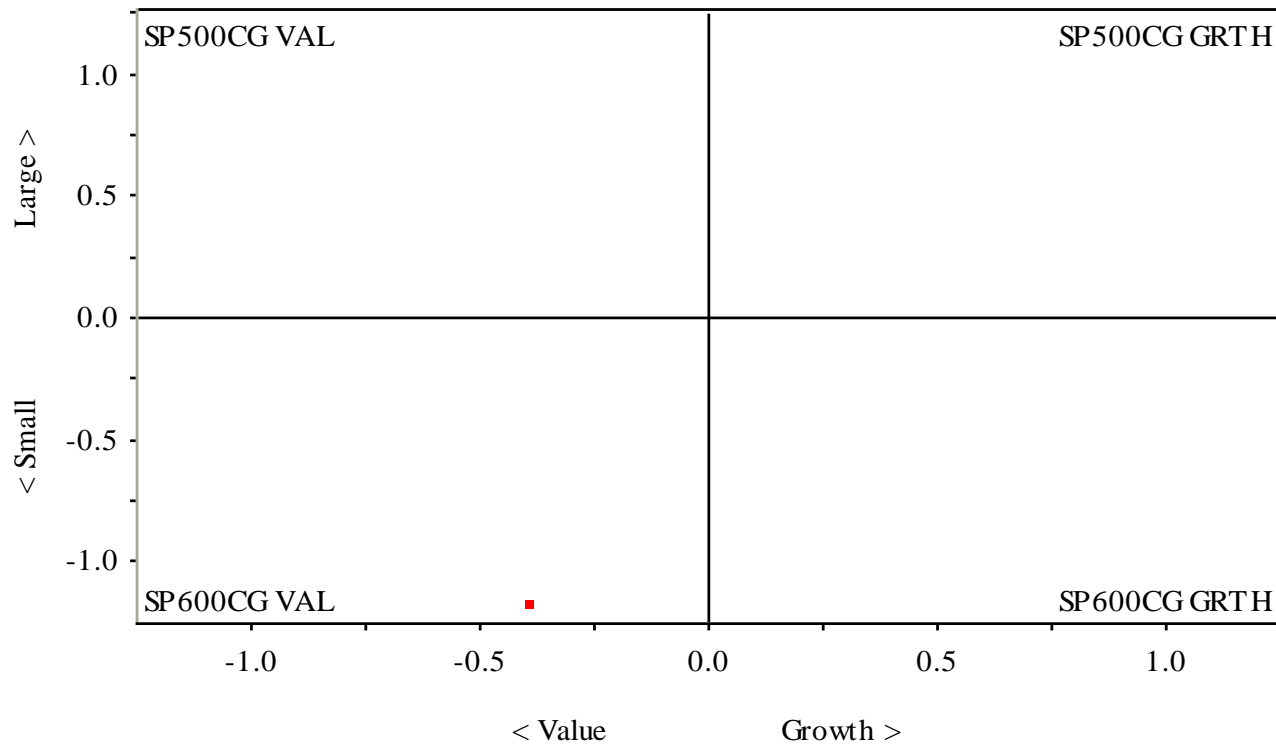
Risk and Return Characteristics calculated quarterly versus Total Small Cap Equity Blended Benchmark

# Positions: Style Analysis

## ASRS US Equity Small Cap Asset Class

July 2002 to December 2007

I

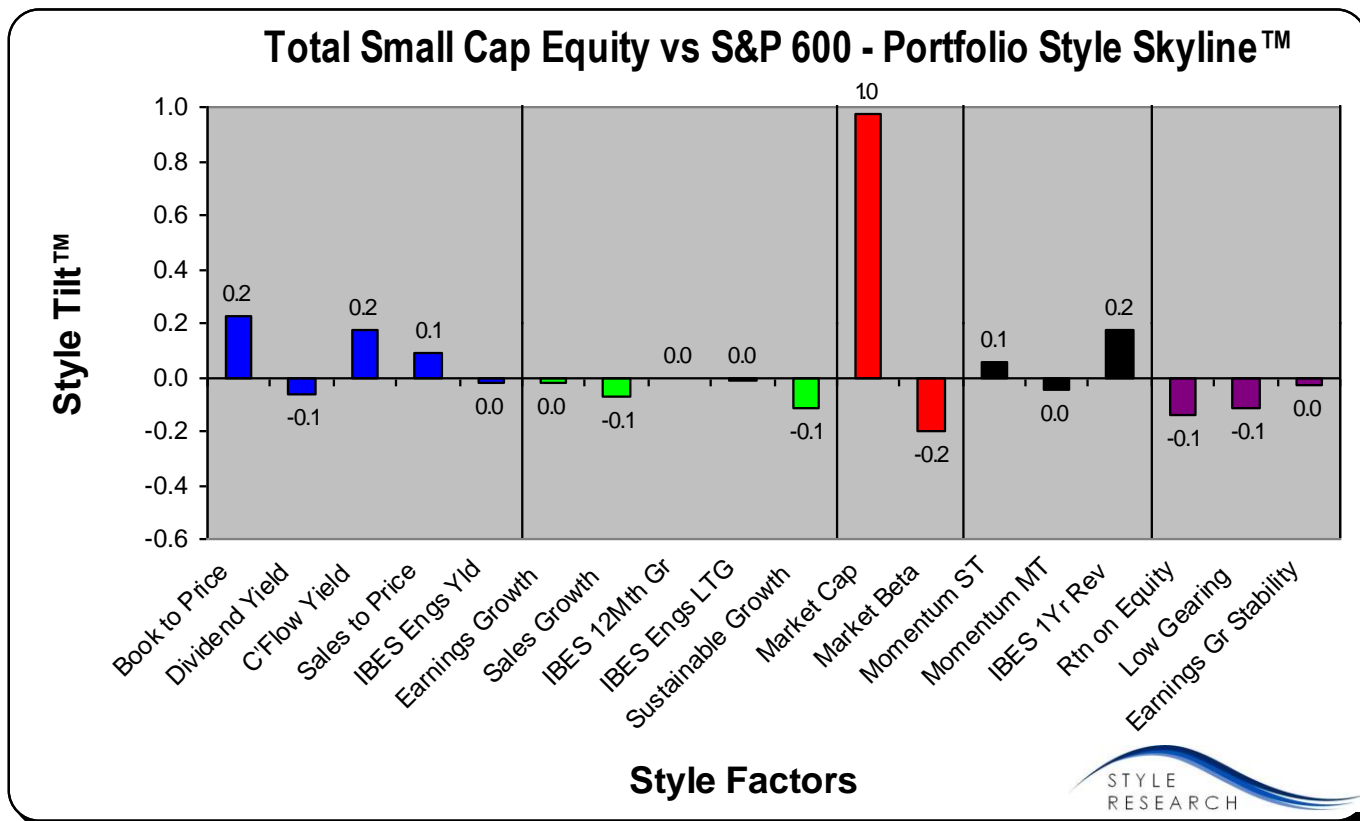


SC Equity

# Positions: Style Analysis – Portfolio Style Skyline

## Total Fund Small Cap Equity

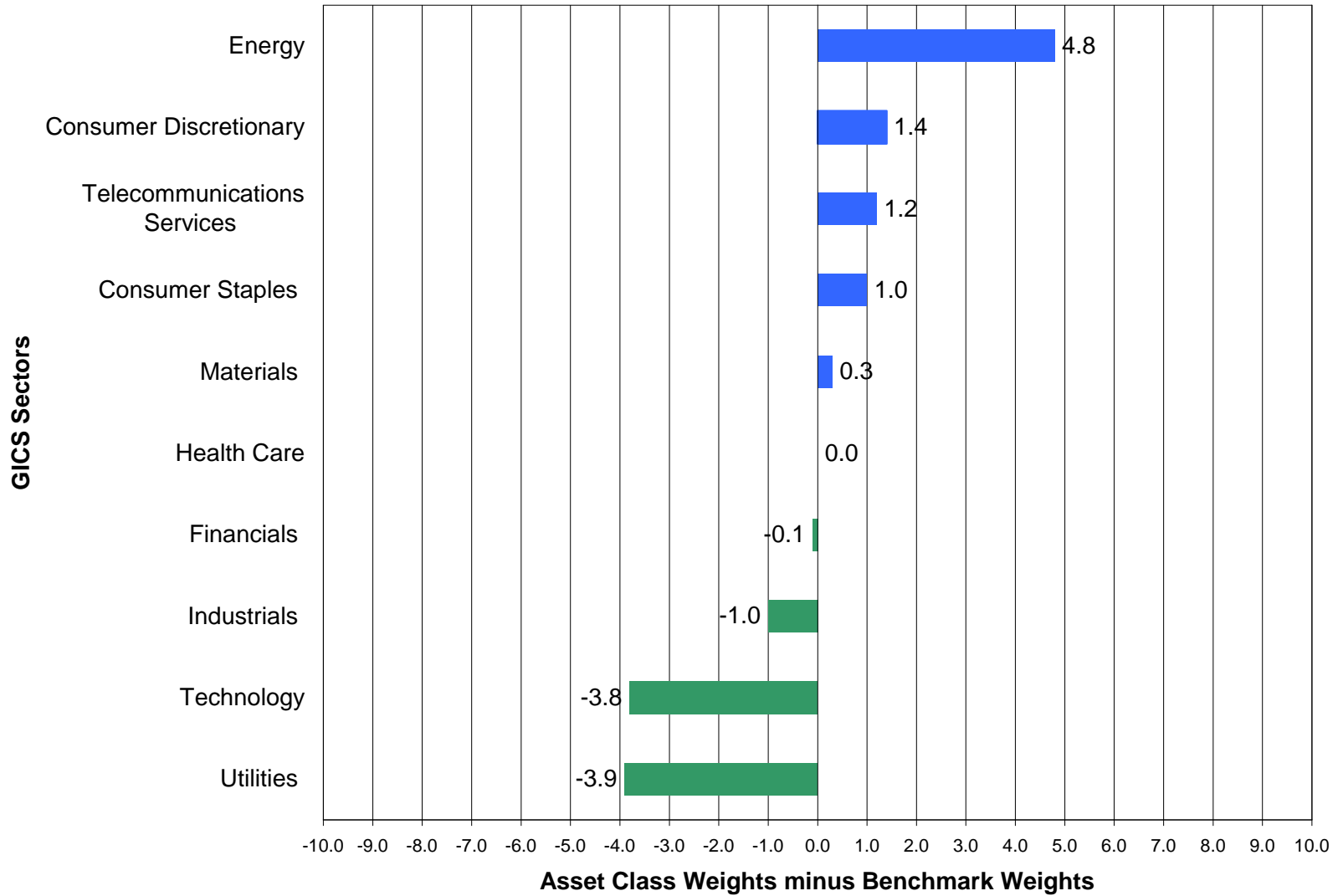
As of December 31, 2007



# Positions: Economic Sectors

## Total Fund Small Cap Equity

As of December 31, 2007



# ASRS US Equity Small Cap Managers

## Mercer Ratings

December 31, 2007

**Mercer ratings signify Mercer's opinion as to an investment strategy's prospect for outperforming a suitable benchmark, on a risk-adjusted basis, over a full market cycle.**

Manager	Strategy	Mercer Rating	Rating Date
DFA	Value	A	12/10/07
TimesSquare	SMID Growth	A	12/10/07
CopperRock	SMID Growth	A	12/10/07
IronBridge	SMID Core	A	12/10/07
Champlain	Core	A	12/10/07

“A” Rated Strategies are assessed as having above average prospects.

“B” Rated Strategies are assessed as having average prospects.

“C” Rated Strategies are assessed as having below average prospects.

“A-” and “B+” are intermediate categories in between “A” and “B” ratings.

“B-” is an intermediate category in between “B” and “C” ratings.

“N” Rated Strategies are not currently rated by Mercer.

See slide 39 for more detail

# **US Equity Small Cap Manager Reviews (Individual)**

## Dimensional Fund Advisors

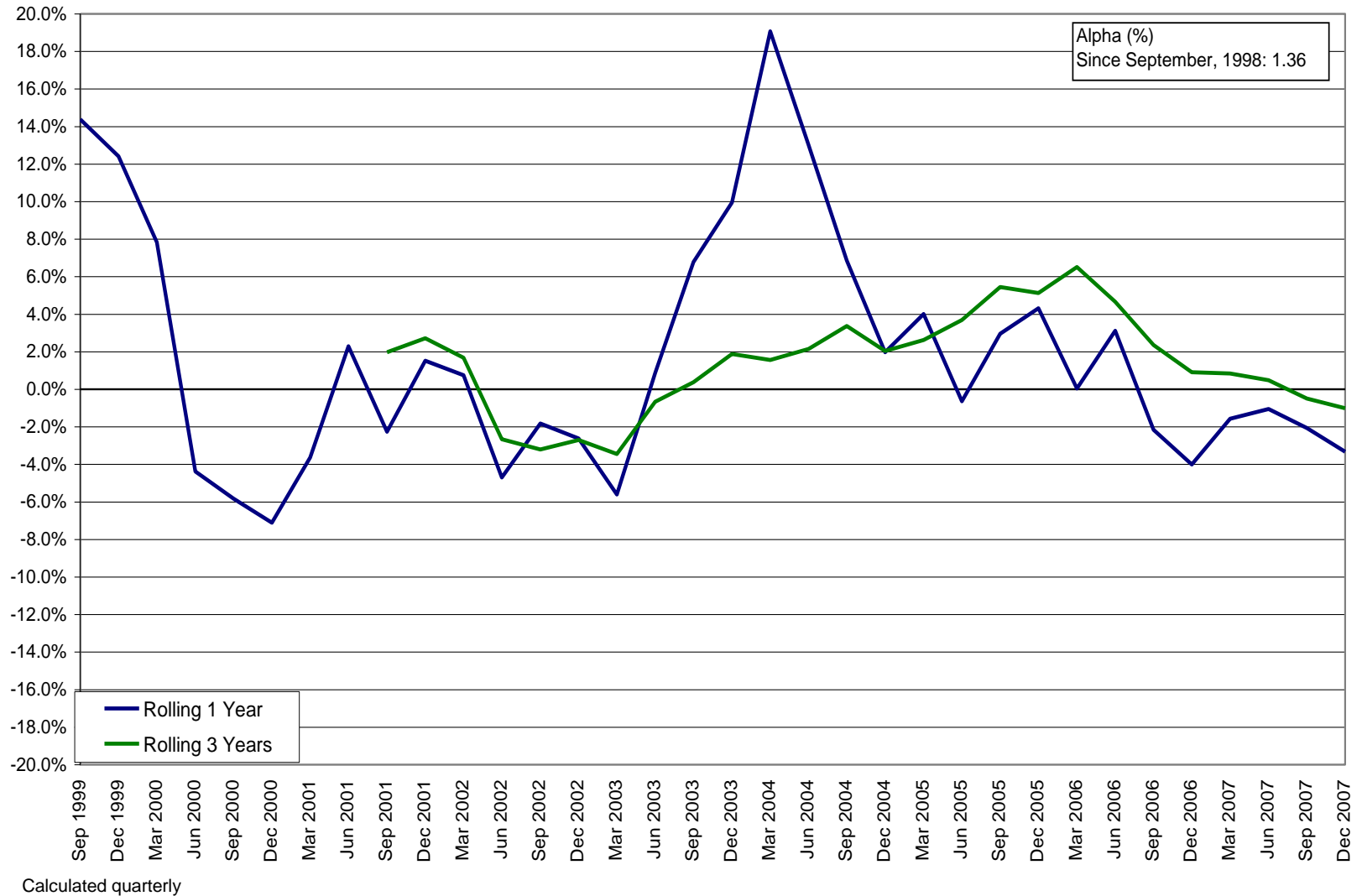
### Qualitative Factors

Factors	Description
People	An Investment Policy Committee focuses on the development of long-term strategy enhancements, while a separate team approves strategy implementations and maintains daily oversight of the strategies. This structure creates a linkage between research and portfolio management.
Philosophy	Based on the work of Eugene Fama and Kenneth French of the University of Chicago, DFA contends that value stocks, once adjusted for capitalization and general market movements, produce higher average returns and lower standard deviations than other stocks.
Process	<p>Seek to invest in companies whose market capitalization is in the smallest 8% of the investment universe.</p> <p>Use a value screen to identify securities considered value stocks – look for high book value in relation to a company's market value (BtM).</p> <p>Additional screens are used to weed out stocks with asset class or pricings concerns.</p> <p>Trading opportunities for all stocks are monitored and must be favorable before purchase.</p> <p>A security becomes a sell candidate once it no longer fits DFA's book to market requirements, and size criteria and passes the momentum screens; this patient trading technique has generally resulted in very low trading costs.</p>

# Alpha

## Dimensional Fund Advisors

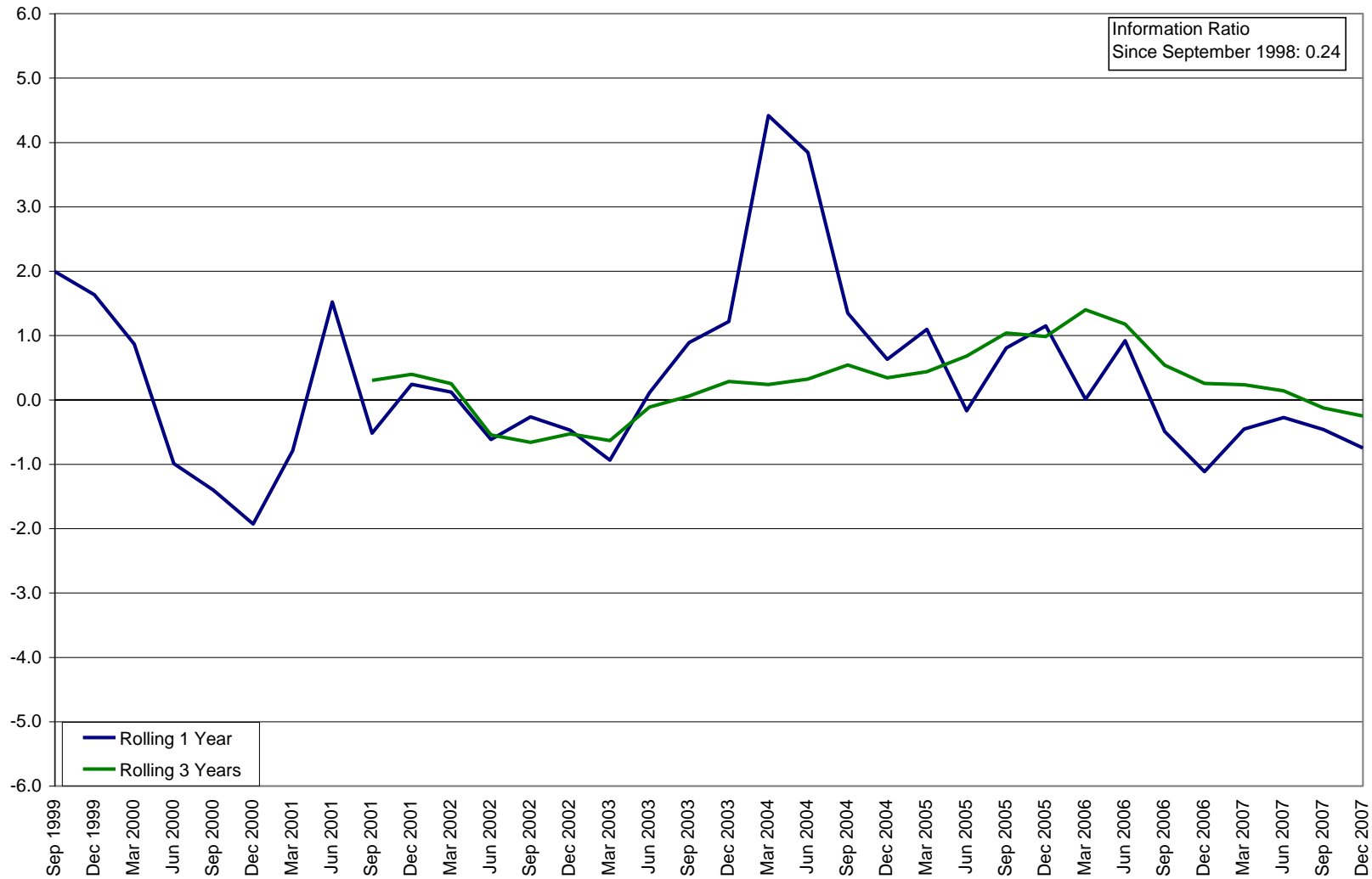
Inception Date August 31, 1998 - Period Ending December 31, 2007



# Information Ratio

## Dimensional Fund Advisors

Inception Date August 31, 1998 - Period Ending December 31, 2007

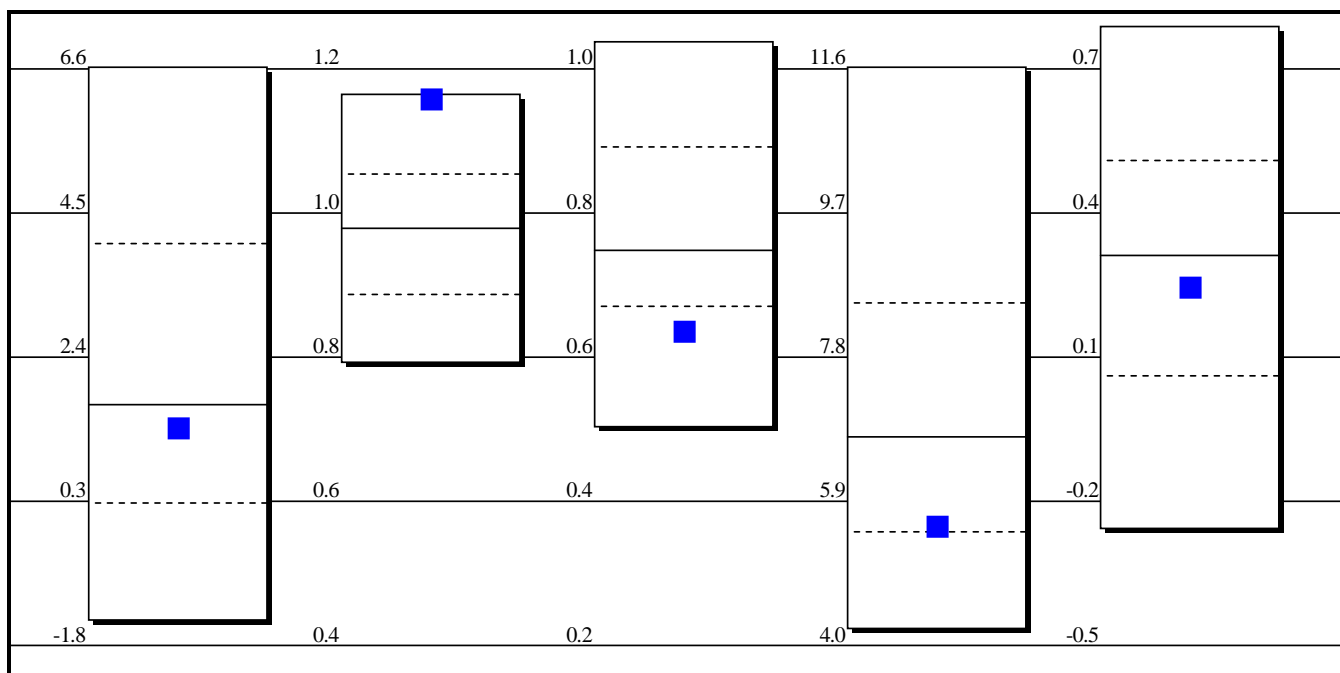


Calculated quarterly

# Peer Comparison with the Mercer US Equity Small Cap Value Universe

## Dimensional Fund Advisors

Inception Date August 31, 1998 - Period Ending December 31, 2007



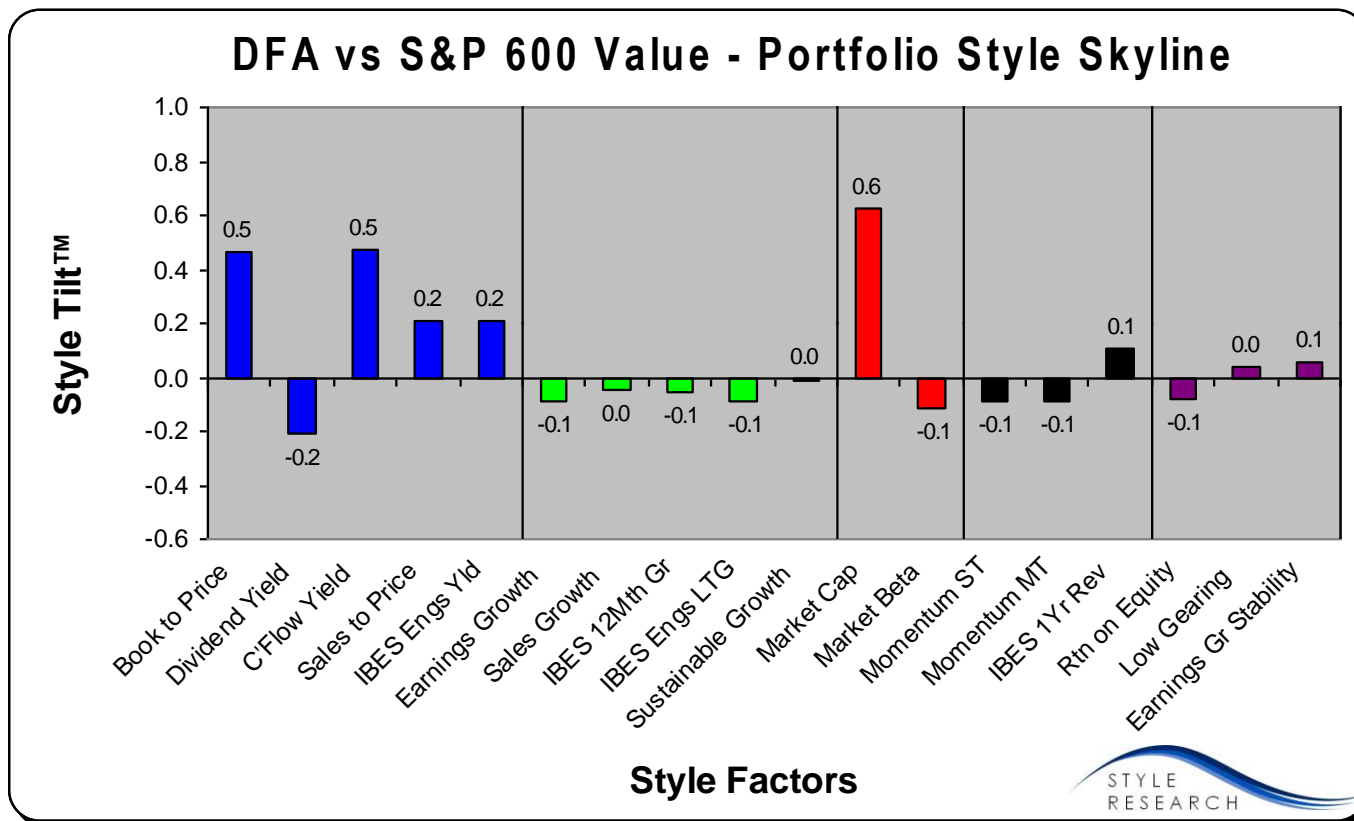
	Excess Return (% pa)	Beta	Reward to Risk	Tracking Error (% pa)	Information Ratio
DFA SC	1.36 (56)	1.16 (6)	0.63 (82)	5.57 (73)	0.24 (55)
5th Percentile	6.62	1.16	1.04	11.60	0.79
Upper Quartile	4.03	1.05	0.89	8.51	0.51
Median	1.70	0.98	0.75	6.73	0.31
Lower Quartile	0.26	0.89	0.67	5.48	0.06
95th Percentile	-1.44	0.79	0.50	4.20	-0.26
Number of Funds	110	110	110	110	110

Risk and Return Characteristics calculated quarterly versus DFA Blended Benchmark

# Positions: Style Analysis – Portfolio Style Skyline

## Dimensional Fund Advisors

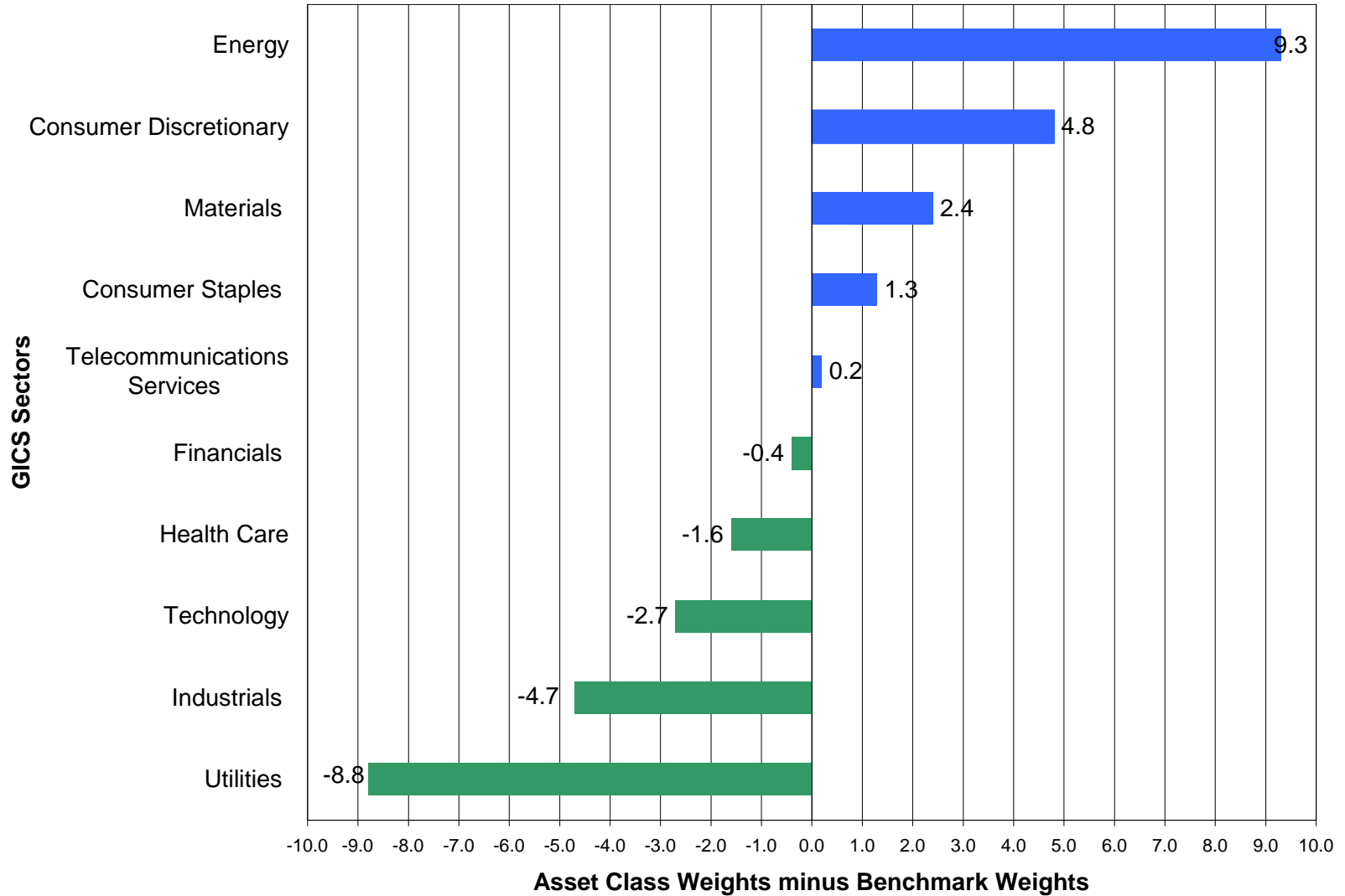
As of December 31, 2007



# Positions: Economic Sectors

## Dimensional Fund Advisors

As of December 31, 2007



# Mercer Manager Review

As of December 31, 2007

<b>Dimensional Fund Advisors (DFA) – US Equity – US Small Cap Value Strategy</b>		
<b>Factor</b>	<b>Rating (-, =, + or ++)</b>	<b>Comments</b>
Idea Generation	++	DFA applies a similar quantitative process to all of its equity strategies and benefits from the insights of top academic researchers in finance who are affiliated with the firm. The firm's use of both committees and individuals to manage portfolios helps provides for a direct linkage between research and portfolio management and helps ensure that the firm's best thinking is quickly reflected in its strategies. Holding portfolio construction decisions constant, value added is determined primarily by the team's success in implementing the academic, trading-based approach to small cap markets.
Portfolio Construction	+	
Implementation	=	
Business Management	+	
<b>Overall Rating</b>	<b>A-</b>	
Rating Date	12/10/2007	As a result of the firm's focus on the smaller, less liquid securities within the small cap arena and the large asset base, liquidity is an issue, and the firm's restrictions on withdrawals and redemptions only will go so far in lessening the negative impact on performance if investors recoil from this least liquid segment of the market. Therefore, DFA's clients need to understand the potential liquidity implications for funding or redeeming an investment.

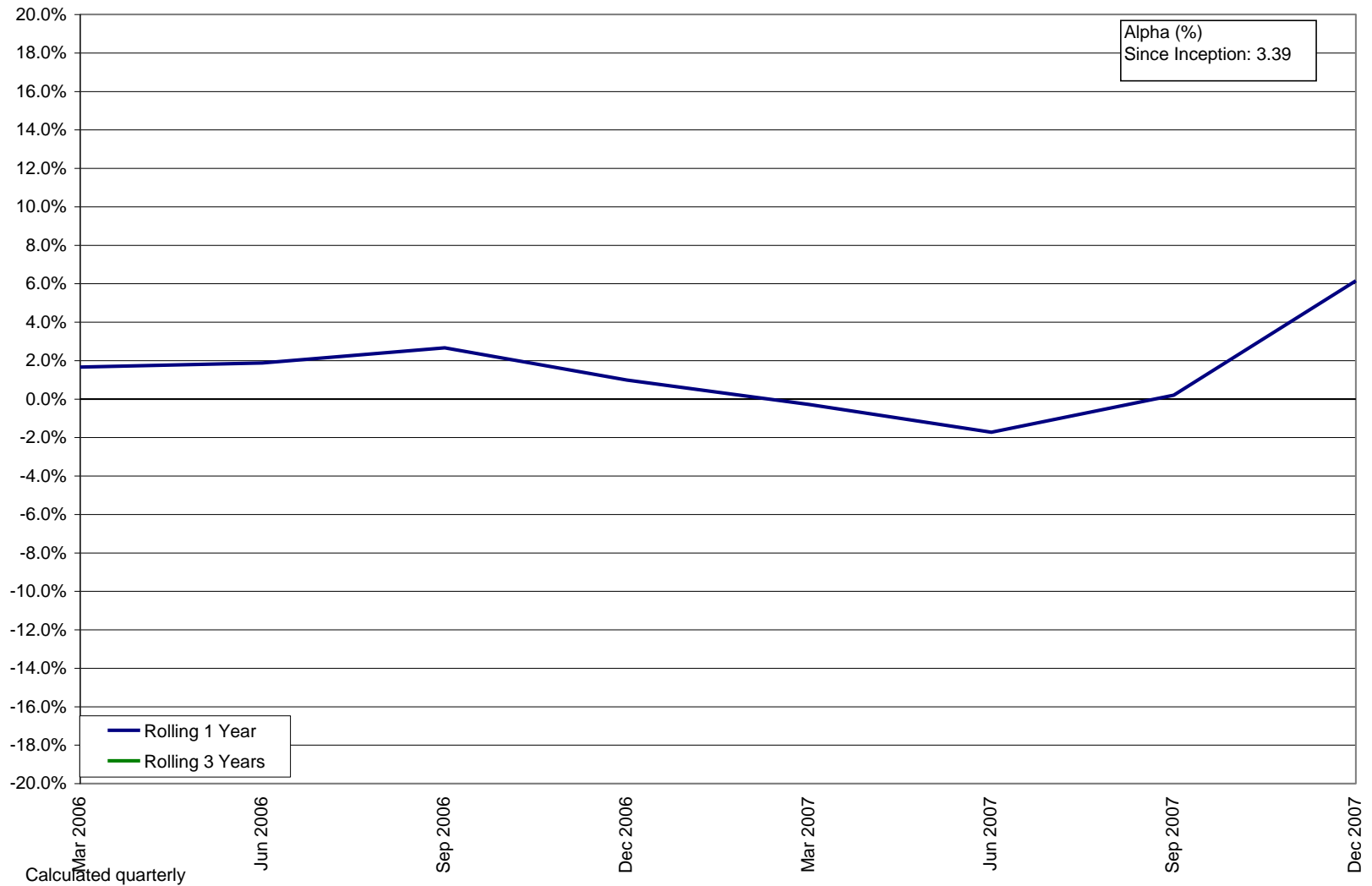
# TimesSquare Capital Management

## Qualitative Factors

Factors	Description
People	<p>The quality of research and stability and experience of the investment team are strengths.</p> <p>Talented portfolio managers work well together and with the analyst team to apply the investment philosophy in a thorough and consistent manner.</p>
Philosophy	<p>Believe research, which places a particular emphasis on the assessment of management quality and an in-depth understanding of superior business models, will result in superior risk-adjusted returns.</p>
Process	<p>Look for stocks with market values between \$300 million and \$5 billion with an expected EPS/Sales growth rate above 15%.</p> <p>Find companies with exceptional management, a sustainable competitive advantage and strong, consistent growth.</p> <p>Conduct further in-depth analysis through detailed financial modeling and valuation work.</p> <p>Purchase companies that have the potential to appreciate 25-50% over an 18 month time horizon.</p>

# Alpha TimesSquare

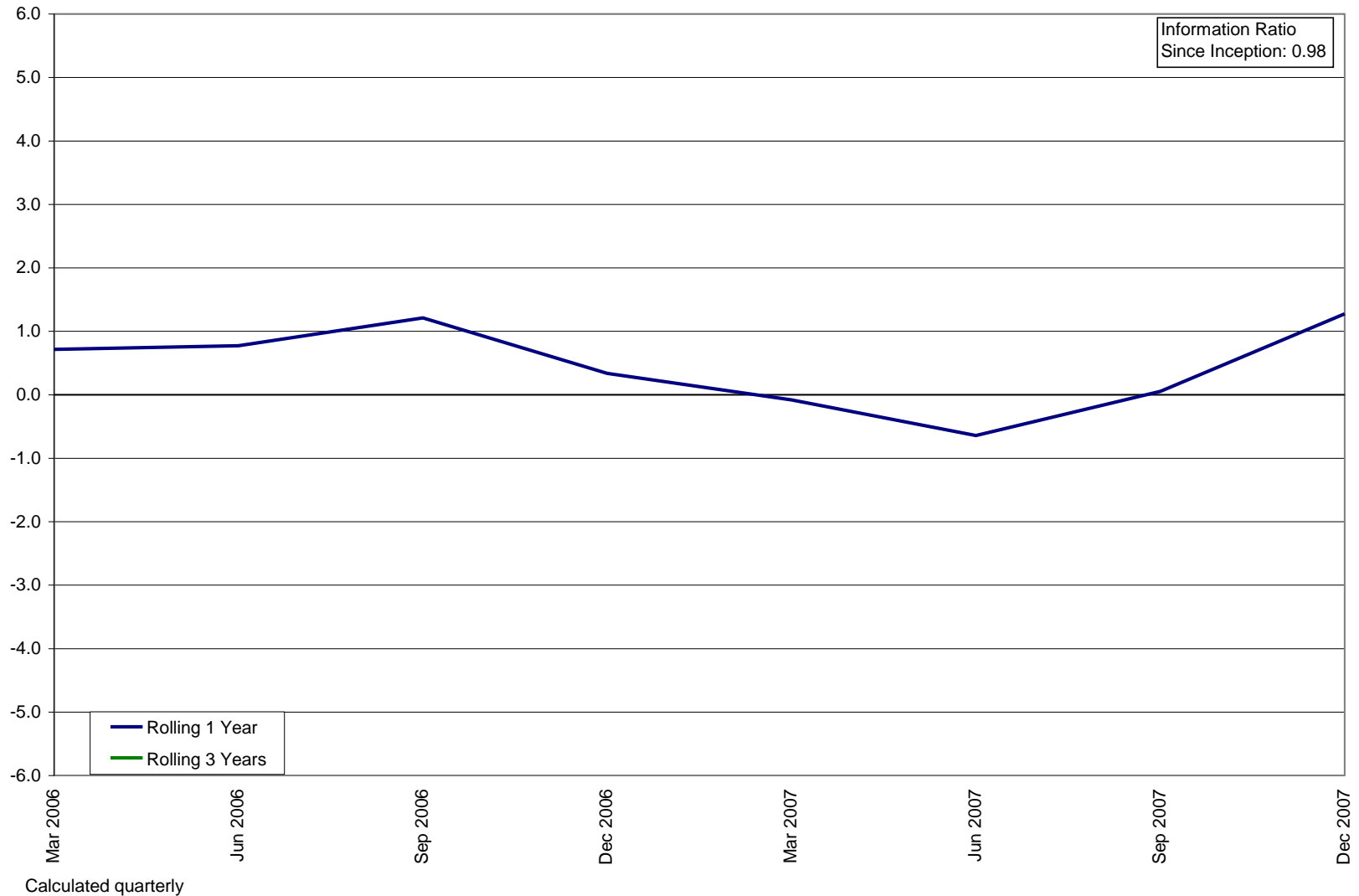
Inception Date March 31, 2005 - Period Ending December 31, 2007



# Information Ratio

## TimesSquare

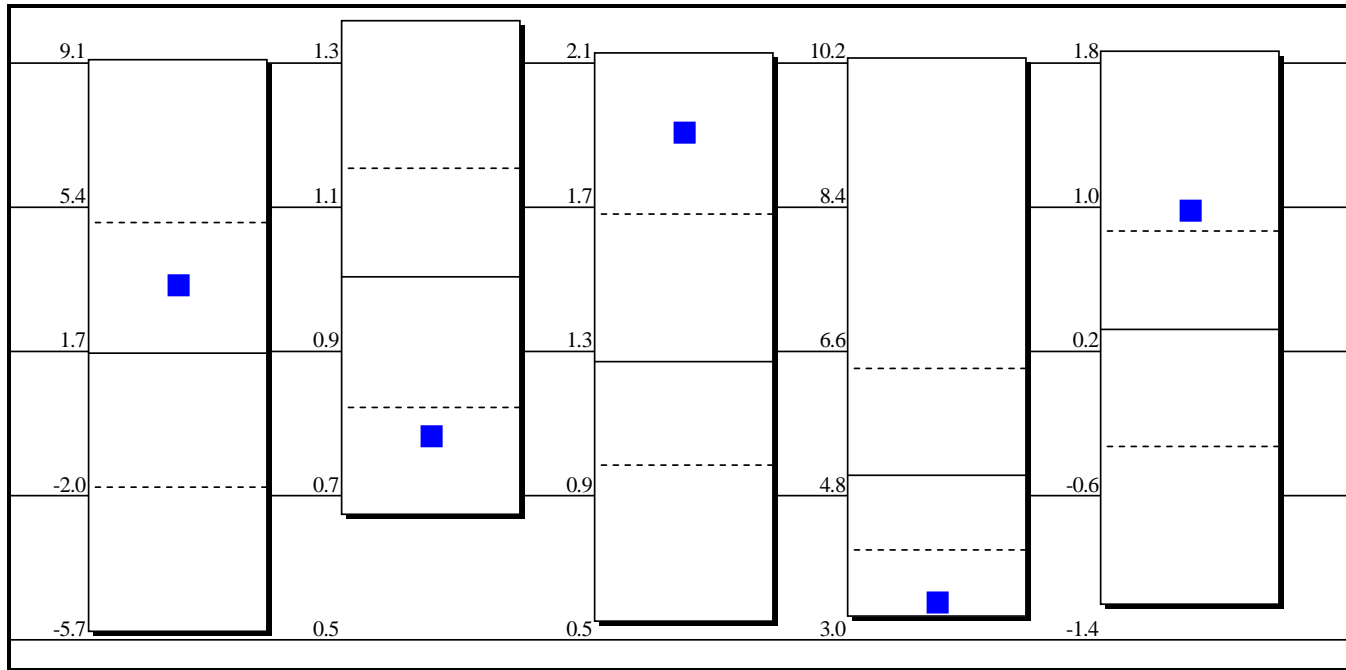
Inception Date March 31, 2005 - Period Ending December 31, 2007



# Peer Comparison with the Mercer US Equity Small+Mid Cap Growth Universe

## TimesSquare

Inception Date March 31, 2005 - Period Ending December 31, 2007



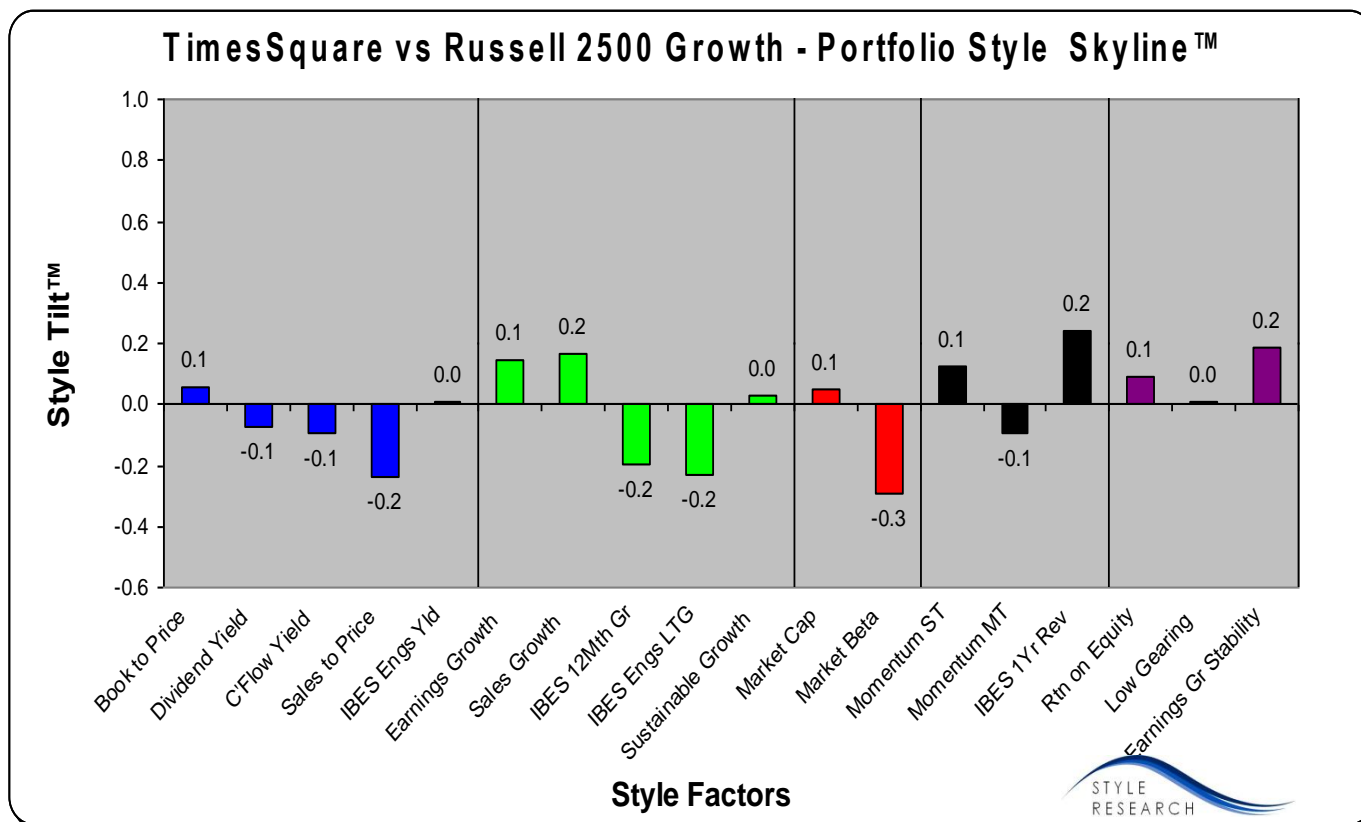
	Excess Return (% pa)	Beta	Reward to Risk	Tracking Error (% pa)	Information Ratio
TimesSquare	3.39 (35)	0.78 (79)	1.91 (11)	3.46 (92)	0.98 (20)
5th Percentile	9.16	1.36	2.12	10.25	1.86
Upper Quartile	4.98	1.15	1.68	6.39	0.86
Median	1.65	1.00	1.27	5.04	0.32
Lower Quartile	-1.79	0.82	0.98	4.10	-0.33
95th Percentile	-5.52	0.67	0.55	3.28	-1.21
Number of Funds	220	220	220	220	220

Risk and Return Characteristics calculated quarterly versus Russell 2500 Growth

# Positions: Style Analysis – Portfolio Style Skyline

TimesSquare

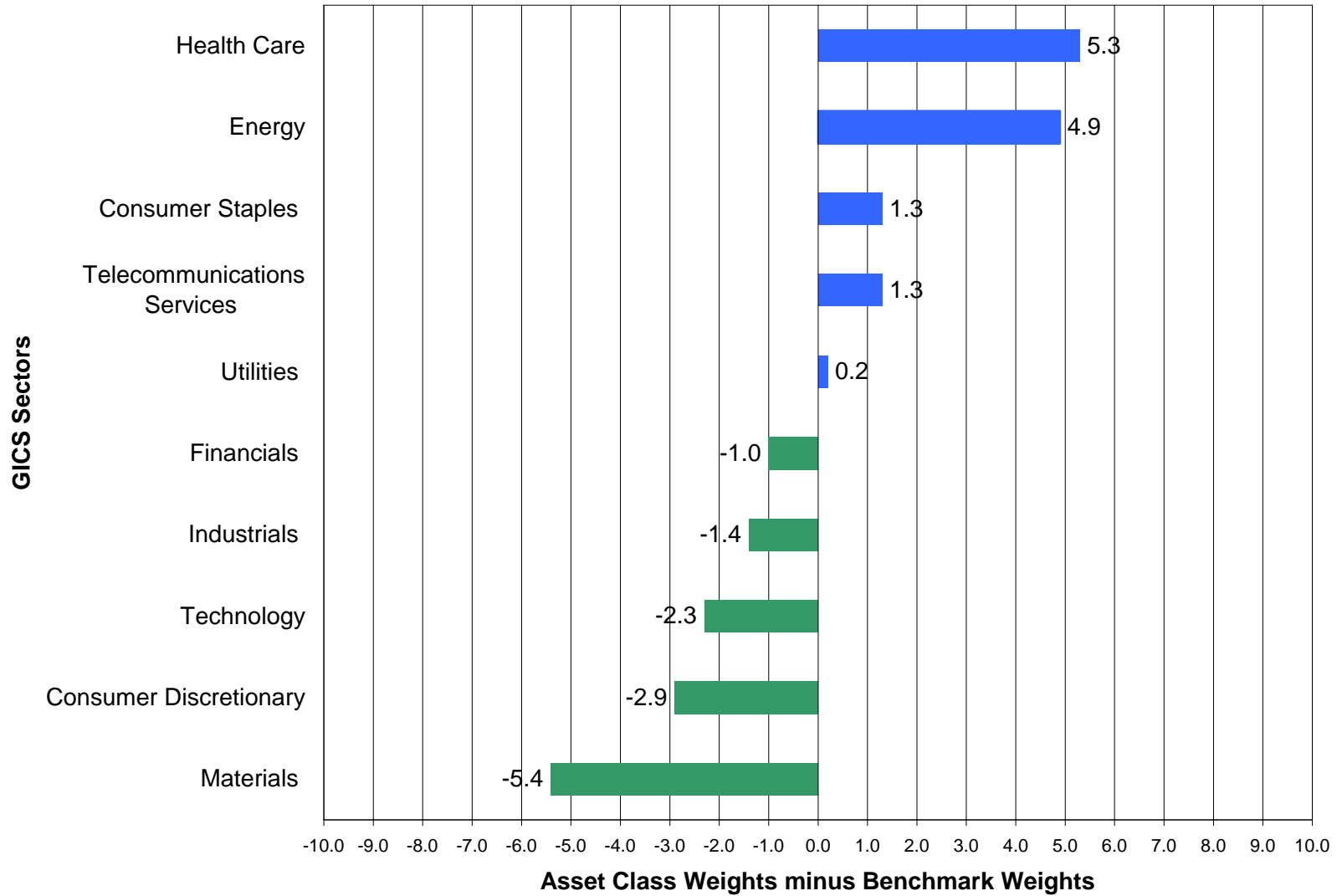
As of December 31, 2007



# Positions: Economic Sectors

TimesSquare

As of December 31, 2007



## Mercer Manager Review

### As of December 31, 2007

TimesSquare Capital Management (TSCM) – US Equity - SMID Cap Growth		
Factor	Rating (-, =, + or ++)	Comments
Idea Generation	++	We continue to have a favorable opinion of TSCM's growth equity strategies led by Babyak and Rosenthal. Both are exceptional portfolio managers and drive the consistent application of TSCM's investment approach. The analyst team is solid and its fundamental research is a strength of the strategy. The portfolio is managed in a risk-controlled fashion and the team is well aware of the portfolio's exposures at all times. The experience and stability of the investment team, combined with a like-minded focus on finding growing companies with a competitive advantage make the strategy a good choice for clients looking for a traditional growth manager.
Portfolio Construction	+	
Implementation	+	
Business Management	+	
<b>Overall Rating</b>	<b>A</b>	
Rating Date	12/10/2007	

# E6 Performance

	Style	Inception	Fee (bps)	Amount (\$mil.)	Net Returns as of 12/31/07	
					3 Months	Since Inception
ASRS E6	Indexed	02/01/07	,	484.2	-6.34	-2.11
S&P 600					-6.45	-2.31
Alpha					0.11	0.20

# CopperRock Capital Partners

## Qualitative Factors

Factors	Description
People	<p>Team based approach with hybrid specialist-generalist model ensures depth of coverage in all sectors.</p> <p>Portfolio Managers have more than 15 years experience in small cap asset class; Research Analysts have an average of 10 years experience in small cap asset class.</p>
Philosophy	<p>Believe small and mid cap markets are inefficient and that a fundamental growth approach with a strong sell discipline provides the best opportunity to outperform in all market conditions.</p>
Process	<p>Narrow universe through organic idea generation, proprietary screens and bottom-up themes.</p> <p>Conduct detailed fundamental analysis. Look for strong growth over a 12-18 month period -15% revenue growth, 20% earnings growth and margin expansion.</p> <p>Disciplined process with a “no excuses” sell discipline.</p>

# Mercer Manager Review

As of December 31, 2007

Copper Rock Capital Partners (CopperRock) – US Equity - SMID Cap Growth		
Factor	Rating (-, =, + or ++)	Comments
Idea Generation	++	<p>Clients looking for a conservative, bottom-up manager, which invests in traditional growth names should be comfortable with CR. All members of the team look for the same blueprint when scouring the equity universe for ideas to find companies with strong, sustainable growth over a 12 – 18 month period. The team does a thorough job of understanding both the risks and the opportunities underlying each name in the portfolio. We believe that the combination of relative valuation, a unique diversification strategy, and CR's "no excuses" sell discipline, results in a more conservatively positioned portfolio than many small cap growth strategies. As a result of CR's investment style, the strategy should perform better in down markets.</p>
Portfolio Construction	+	
Implementation	+	
Business Management	+	
<b>Overall Rating</b>	<b>A</b>	
Rating Date	12/10/2007	

# IronBridge Capital Management

## Qualitative Factors

Factors	Description
People	<p>The firm's founders were instrumental in developing and enhancing the CFROI framework while they were at HOLT Value Associates, L.P. Since establishing IronBridge, the team has enhanced this framework on a proprietary basis.</p> <p>All employees of IronBridge own shares in the firm, summing to roughly 73% of firm ownership. IronBridge has only lost one employee in its history dating back to 1999.</p>
Philosophy	<p>IronBridge's investment philosophy is based on three key beliefs:</p> <p>The Cash Flow Return on Investment (CFROI) framework is the most effective tool for measuring true economic performance and valuing companies.</p> <p>The Life Cycle concept is an important tool for identifying the correct path of analysis and managing portfolio risk.</p> <p>Wealth creation is contingent upon management's ability to allocate capital appropriately relative to the company's position on the corporate Life Cycle.</p>
Process	<p>IronBridge's proprietary IronScore places all stocks into their appropriate Life Cycle category and then ranks each stock within its category based on proprietary factors; high ranking stocks are subjected to fundamental analysis.</p> <p>The portfolio is diversified by both Life Cycle and Sector to reduce the impact of systematic factors, allowing performance to be driven by stock selection.</p> <p>IronBridge utilizes multiple trading platforms to ensure best execution.</p>

# Mercer Manager Review

As of December 31, 2007

IronBridge Capital Management – US Equity – Small/Mid Cap Core		
Factor	Rating (-, =, + or ++)	Comments
Idea Generation	++	We view the strength of the approach as a combination of the investment team's research capabilities and the life cycle diversification used in portfolio construction. The process relies heavily on the CFROI framework to evaluate securities quantitatively. However, the team makes investment decisions by applying its unique understanding of these models gained while working at HOLT. The firm's stock selection and portfolio construction are unique, particularly as it relates to the life cycle diversification requirement, and ensure a broad exposure to a variety of market factors.
Portfolio Construction	++	
Implementation	=	
Business Management	+	
<b>Overall Rating</b>	<b>A–</b>	
Rating Date	12/10/2007	

# Champlain Investment Partners

## Qualitative Factors

Factors	Description
People	<p>Investment team is comprised of seasoned investment professionals who worked together at NL Capital in the past.</p> <p>Portfolio manager/analyst position allows for investment staff to have an impact on the portfolio.</p> <p>The firm's ownership structure and investment management process are advantages for staff.</p>
Philosophy	<p><del>Believe buying the shares of superior businesses with credible and sincere management</del> teams at a discount to Fair or Intrinsic Value gives investors several potential paths to wealth creation.</p>
Process	<p><del>Focus on cash flow from operations and assume the perspective of a creditor when</del> attempting to value a company.</p> <p>Identify simple, yet logical investment themes that vary by sector.</p> <p>Before initiating a position, Champlain meets with management on multiple occasions and in different settings.</p> <p>Buy superior companies at a discount; sell overvalued stocks.</p>

# Mercer Manager Review

As of December 31, 2007

Champlain Investment Partners (Champlain) – US Equity – Small Cap Core		
Factor	Rating (-, =, + or ++)	Comments
Idea Generation	++	Brayman and his partners have done a very good job transplanting their strategy from NL Capital to Champlain. The strategy's key competitive edge is Brayman's investing talent, particularly his ability to find opportunity in both growth and value stocks. Champlain Small Cap Core will tend to have a higher quality, larger cap bias (within the small cap universe), so it will likely underperform in a narrow or speculative market.
Portfolio Construction	+	
Implementation	+	
Business Management	++	
Overall Rating	A	
Rating Date	12/10/2007	

# Mercer Disclosures

## **GUIDE TO MERCER RATINGS**

### **What do Mercer ratings signify?**

Mercer's rating for an investment strategy signifies Mercer's opinion as to its prospects for outperforming a suitable benchmark, on a risk-adjusted basis, over a full business cycle. The Mercer rating is recorded in the entry for the strategy on Mercer's Global Investment Manager Database (GIMD).

Strategies rated A are those assessed as having above average prospects. Those rated B are those assessed as having average prospects. Those rated C are assessed as having below average prospects. A- and B+ are intermediate categories in between A and B, and B- is an intermediate category in between B and C. If the rating shown on GIMD is N, or if no rating is shown at all, this signifies that the strategy is not currently rated by Mercer.

Mercer maintains ratings for a range of different product categories. These ratings are reviewed regularly by one of several Ratings Review Committees that operate within Mercer. These Committees draw on research carried out by Mercer manager researchers and consultants. The role of these Committees is to review this research from a quality control perspective and ensure consistency of treatment across products within a product category, rather than to redo the research from scratch.

### **What do they not signify?**

The rating assigned to a strategy may or may not be consistent with its past performance history. While the rating reflects Mercer's expectations on future performance relative to benchmark, Mercer does not provide any guarantees that these expectations will be fulfilled.

Also, unlike credit ratings assigned by agencies such as Moodys and S&P, the ratings are not intended to imply any views about the creditworthiness of the investment manager providing the product.

Mercer ratings are assigned to strategies rather than to specific funds. We use the term "strategy" in this context to refer to the process that leads to the construction of a portfolio of investments, regardless of whether it is offered in separate account format or through one or more funds. Potential investors in specific funds should therefore consider not only the Mercer ratings for the strategies being offered through those funds, but also any fund-specific issues such as fees, frequency of dealing dates and any legal or regulatory issues relating to the type of fund and where it is domiciled.

More generally, Mercer does not take investment management fees into account in determining ratings. The rationale for this is that the fees charged for a specific strategy will often vary from one client to the next, either because of differing account sizes or because of differing inception dates or because of some other factor. Potential investors in a specific strategy should therefore consider not only the Mercer rating for that strategy, but also the competitiveness of the fee schedule that they have been quoted for that strategy.

The manager research process employed by Mercer to arrive at ratings does not normally include exhaustive operational due diligence checks. Mercer's manager researchers start from the assumption that the manager's back office is satisfactory from an operational point of view unless the manager's auditors or regulators have come to a contrary view. Having said that, any operational weaknesses that do come to light in the course of Mercer's manager research are noted and taken into account in determining ratings as appropriate.

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- Past Performance cannot be relied upon as a guide to future performance.*
- The value of stocks and shares, including unit trusts, can go down as well as up and you may not get back the amount you have invested.*
- The value of bonds and other fixed income investments including unit trusts can go down as well as up and you may not get back the amount you have invested.*
- Investments denominated in a foreign currency will fluctuate with the value of the currency.*
- The value of investments in real property can go down as well as up, and you may not get back the amount you have invested. Valuation is generally a matter of a valuer's opinion, rather than fact. It may be difficult or impossible to realise an investment because the property concerned may not be readily saleable.*
- The performance of with-profit policies depends on the profits declared by the Insurance Company and how these are distributed. Deductions for charges and expenses incurred by the Insurance Company are greater in the early years, and this affects the amount payable on early surrender.*

